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A Survey to Determine the Effectiveness of Portable Classrooms in Today's Educational Picture

Daun E. Olson
Central Washington University

A SURVEY TO DETERMINE THE EFFECTIVENESS OF PORTABLE CLASSROOMS IN TODAY'S EDUCATIONAL PICTURE

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Daun E. Olson

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APPROVED FOR THE GRADUATE FACULTY

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Darwin J. Goodey

_____

Donald G. Goetschius, COMMITTEE CHAIRMAN

_____

Edward K. Erickson

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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS USED

Many school districts across the nation are using portable classrooms as the answer to their immediate housing problems. Although supplementary classrooms have helped many school districts to overcome their shortage of classroom space does not mean that they have been accepted as the final answer to today's classroom shortage.

DeShow, a leading authority on school building construction, states; "Temporary buildings are temporary for the first fifty years. When portables are placed they are permanent. Temporary is not temporary."(8:22)

Some educators question the value of relocatable structures. In a study conducted by School Management of reactions of four widely separated states, it points out:

> With minor exceptions, most of the schoolmen interviewed considered portable classrooms to be a temporary expedient. In no case did we find an educator who preferred a true portable to a conventional structure.
>
> In not a single instance did we find that portable classrooms had been built solely to save money. The underlying reason was the need for speedy building or the fear of over-building to meet temporary bulges in pupil population. (15:26)

These facts posed the following questions: (1) Are portables a valid method of handling the classroom shortages which exist in the United States today? (2) Are portables

equal to permanent buildings, as long as they meet the educational needs of the students? (3) Are portables strictly a temporary measure? (4) Are portables a sign of internal weaknesses within a school district, depending on their use?

It was determined by the author that through this survey of the University Place School District and their use of supplementary classrooms some of the above questions could be answered.

I. THE PROBLEM

Statement of the problem. The purposes of this study were: (1) to determine if portables, depending on the circumstances and needs of the school district, are a valid method of handling today's overcrowded conditions, (2) to show how supplementary classrooms were used by the University Place School District, (3) to provide a reference source for others who plan to use relocatable structures.

Importance of the study. Portable classrooms are in use in many of the nation's school systems at this time. They are being used under a variety of circumstances and their use would indicate that they are serving a prominent role in today's educational picture.

Through long-range planning, school districts are responsible for providing space for future enrollments. But

what happens when the "unforseen" occurs? Some means of providing additional space must be found to overcome the immediate housing problems.

The circumstances surrounding the needs of each district dictate the manner in which their housing problems will be solved. The purpose of this paper is not to solve, nor answer the questions faced by others who need immediate space, but rather to enlarge upon the experiences of the University Place School System, in hopes that what they have done in this field will assist others facing similar problems.

Limitations of the study. This study is limited to the experiences of the University Place School District.

Gathering data for this study involved the utilization of the facilities and records of the above named district, which in itself, is an obvious limitation due to the size of the school district and to the procedures used for recording information.

Another limitation was that some information came from the memories of those involved because there were no written records available on rationale behind the decisions made in regard to portable classrooms in the district.

The scope of this study was also hampered by the lack of available related material on portable classrooms.

II. DEFINITIONS OF TERMS USED

Supplementary Classrooms. For the purpose of this study, a supplementary classroom is space provided, whether mobile or semi-permanent, that is considered to be a temporary measure.

Relocatable structures. This term was designated to mean any structure designed to be easily transportable from one location to another.

Portable. This expression indicates a building designed to be readily moved from one site to another as the need arises.

Permanent structures. For this study a permanent structure is all buildings designed for fixed use and included as an integral part of the long range building program.

Developmental plan. This expression indicates a general plan for the future development of the community or area involved. Its purpose is to further the welfare of the people by helping to create a more convenient, efficient, healthful and attractive environment in which to live.

III. SOURCES OF DATA AND METHODS OF PROCEDURES.

Extent of coverage. To obtain the needed information

for this study a systematic search of the information on file concerning the use of portables by the University Place District, was conducted. The available records were studied and helpful information was obtained for use in this study. The school district's files contained the specifications, bids, plans and other necessary information needed for initiating and conducting their supplementary classroom construction program.

The information compiled by the school architect, Robert Billsborough Price, in his advanced planning for portable construction, was reviewed.

Mr. Raymond Beard, principal of Curtis Junior-Senior High School, Tacoma, was interviewed to obtain his concept of the development and practices in the use of relocatable structures at Curtis.

Mr. George Curtis, superintendent of the University Place School System, was interviewed to gather data on the background of the use of supplementary classrooms by this school district.

Other sources surveyed were books, pamphlets, periodicals, brochures and articles. Many materials printed by the Educational Facilities Laboratories were referred to for data pertinent to the subject of portable classrooms.

Included also was information gained from continual visits to school district offices and several conversations

with people involved in some manner with the building program.

Methods of procedure. A normative-survey method was employed in this investigation of the facts and prevailing practices in the use of portable classrooms in the University Place School System. The questionnaire and personal interview techniques were aspects of the normative-survey method used in the study.

A review of the available literature was surveyed to gain an indication of the circumstances and use of portables by various school districts across the nation.

CHAPTER II

REVIEW OF LITERATURE

One of the most difficult problems facing school boards today is that of student populations that not only continue to grow, but shift restlessly from area to area.

I. SCHOOL BUILDING SHORTAGE

Causes. Charles D. Gibson posed the question:

> How can we provide enough classrooms? From coast to coast this is the school question. Current and reliably predicted enrollments at every grade level are nearly straight-up curves. Today's school housing shortage, broadly, is direct product of a combination of a depression, wars, high birth rate and a population mobility. Indirectly, its size and complexity also must be credited to factors such as poor school districting, or school district organization, lack of long-range planning and inadequate financing. They are all perennial curses on educational programming in this country.
>
> While no one denies the problem, some underestimate its real size; for example, by assuming it is temporary. The only excuse for such an attitude is wishful thinking. The cold statistics are available nationally from the United States Office of Education. We will continue to face the need for extensive school plant construction for many years. (12:3)

Frank G. Lopez, discussing school building construction said:

> School buildings have increased in national importance since World War II. There are currently more square feet being build for educational purposes than for any other type of structure, excepting only commercial buildings and single-family housing. (11:14)

It is not difficult to see why the need for school building construction clearly exists. But what principal factor has caused this serious lag in construction?

Luther Lockwood asserted that:

> Of the many problems causing the shortage of school buildings, probably the most important one is financing. In Indiana the great majority of school corporations are unable to finance at once their school building needs because of the limited bonding capacity and present indebtedness created by previous building programs. The present high costs of construction in both labor and materials reduce the purchasing power of the funds available but the bonding capacity has remained static. The poor and inadequate buildings that cover the nation are the result of "shoestring" financing. They have tended to freeze the educational program on an inferior level and have impeded progress and changes that are vital if our schools are to serve our youth adequately. (13:39)

A specific instance of the financing problem comes from Wayne County, Indiana. Superintendent Gladden stated:

> We have close to 16,000 youngsters in our county, with an estimated 1,500 more next year. We have 40 to 55 children in each classroom. We are trying to get additional buildings and have gotten some. Additions were started two years ago, some are finished. After two years we are behind again. We are not catching up. We cannot build everything needed. Our bonding and taxing power won't allow this. (8:21-22)

Solutions. It is recognized by leading experts in the educational field that with alterations in the methods of financing and financial support from state level our building problems could be solved, but initiating changes is a slow process, while at the same time the question that must be answered is, "What measures must be employed to solve the immediate problem?"

Do we want over-crowded classrooms? Should we build inferior structures with our limited budgets that will temporily solve the problem? Some communities are seeking and testing approaches to meeting their short-range and emergency housing needs. They are considering such solutions as shared-occupancy with residential or commercial complexes; the use of several floors in a high-rise building; and the conversion of existing commercial or residential buildings for school use.

II. PORTABLE CLASSROOMS AS A SOLUTION

One way to provide space on short notice is through the use of supplementary classrooms. A host of communities use portable classrooms as a solution to their problems. No matter what solution is adopted by the hard-pressed school district, the basic considerations for school building planning must be kept in mind.

In the Guide for Planning School Plants, published by National Council on Schoolhouse Construction, it is stated:

> The major consideration transcending all others in planning a school building is the educational program to be housed. The degree to which a school plant provides a proper environment for the activities which must go on in it determines its quality level. Unless this simple, yet essential approach to school plant planning is accepted, it is highly probable that the physical plant will hinder or defeat the school and community program instead of promoting it. (11:5)

Experimentation. Several school communities, architects, and suppliers have undertaken truly experimental approaches to developing relocatable school facilities. Some of these experiments have dealt with variations of traditional building designs and techniques; others have taken off on entirely new approaches, following new concepts of design, framing, materials, etc. In every case, however, the planners have quite logically realized from the onset that they might have to pay a premium for the feature of relocatability in any structure which would meet high quality standards. In such cases, the need for actual relocatability to meet emergency housing needs and fluctuating enrollments has been given first consideration. While cost has not been overlooked, it has subordinated to the need of mobility. (9:2-3)

In a majority of cases it is clear that the pressure of a lack of adequate building funds induced the use of these units much more than the announced need for relocatability. Building codes are generally more lenient with "temporary and/or movable structures" than with permanent construction. (6:2)

Prevailing conditions. More than 36,000 "non-permanent facilities" are currently being used in United States Schools, as reported in a spring, 1962 National Inventory of School Facilities and Personnel, a study by the United

States Office of Education, released in February, 1964. Of these, 31,230 units are in public schools, 4,782 in non-public schools.

Examples of more than 10,000 of these units were reviewed in detail by the Educational Facilities Laboratories in their report on Relocatable School Facilities. Less than a fraction of one per cent of the total reflect any real infusion of creative design or advanced educational planning (6:9-10)

As a short term investment, such low-cost buildings can provide more immediate shelter and a higher quantity of housing for a lower initial capital outlay than permanent structures might run. The quality of educational utility and structure, however, is generally lower than life of structure built to lower standards and the higher costs of maintenance all add up to higher costs over a long period of time than is normally the case with quality, permanent construction. (15:30)

Wherever the portables have been built, a certain amount of public controversy has followed. In Los Angeles, when the board of education authorized construction of enough portable buildings to end half-day sessions within one year, the crash-program was hotly contested. Other taxpayers, particularly the economy-minded, were enthusiastic. Surprisingly enough, educational administrators and teachers have not taken

a strong position on either side. Their position is one of caution as they weigh overcrowding against portable facilities. (10:37)

The trend toward transportable schools has been hampered by the common practice of making them substandard, makeshift arrangements unworthy of careful design, good construction and continued maintenance. In many communities the transportable school has inherited the disrespect of the World War I shed-like "portable" that still blemishes the backyard of schools in our large cities. (6:10)

Considerations for the use of portables. One of the basic considerations in deciding whether to use portable classrooms is their adaptability to the district's total educational program. According to Superintendent William S. Sartorius of the Baltimore County Schools:

> Studies of portable classroom effectiveness for our schools have revealed no difference in achievement between pupils attending classes in portables and those who get instruction in regular classes. (10:37)

It is admitted by Superintendent Milton Pearce of the Philadelphia Public School System:

> There are self-imposed limitations. None of the portables used in this system have toilet facilities or programmed bells. These have been omitted in the interest of economy and to underline the essential "temporariness" of the structures. Some few of the portables have no covered passageways, an obvious inconvenience. These handicaps are outweighed, Philadelphia feels, by the a voidance of overcrowding and double sessions, and by the savings inherent in their low cost and apparent durability. (15:27)

To many school people, the portable ranks with the Quonset hut as a crude stop-gap which at least partly keeps out the elements. But they should look again. Great steps have been taken to put these structures in the Cadillac class. The best transportable buildings are skillfully planned, solidly built structures which use modern technology and materials to create pleasant places for teaching and learning. Air conditioning is now often featured, as is a thoroughly sophisticated control of lighting, acoustics and general atmosphere. (9:1)

It would seem that we now have reached a point where re-locatable structures have become an acceptable, even desirable method for meeting the demands of increased enrollment that appears to be at least as good as the permanent structures and in some cases better. These modern transportable classrooms offer to the educational management the ability to provide space on short notice. Later they can recover that space for deployment elsewhere as unpredictable needs arise.

Portable structures offer an atmosphere conducive to learning and creativity. New and complete flexibility in design adds a whole new dimension in flexible building utilization to the established concept of flexible campus planning. Mobile units are not intended to displace the permanent-type of school structure. Rather, they are to

provide, without compromise of educational values, interim facilities for use when enrollments exceed building capacities, when influxes of students surpass accommodations, and when interim facilities are needed until adequately planned and financed permanent structures can be built. (9:3)

In the meantime portables are being used as classrooms, science laboratories, study halls, student housing, libraries, counseling centers, offices, student unions, book stores, data processing centers and vocational educational facilities.

When they have been developed to match the best of the permanent buildings now available, they add a new ability on the part of harried administrators to deploy space quickly as schools grow or shrink. Some of the cities and some of the rapidly growing districts are planning that as much as fifteen per cent of their total classroom space shall be in the form of superior transportable classrooms. (5:130-1)

With school populations increasing rapidly and with Americans enjoying so much geographical mobility, it has become extremely difficult to make accurate enrollment predictions in many areas, even on a year-to-year basis. Consequently, many school administrators are turning to portable classrooms to ease the strains of mass enrollments and shifting school populations.

CHAPTER III

ANALYSIS OF THE DATA

The findings of this study were determined by an analysis of the unincorporated community of University Place. It is an efficient, well-organized community located just west of the Tacoma city limits and comprising ten square miles.

I. THE COMMUNITY AND PEOPLE

Development. This area developed slowly until late 1940, when a spurt of growth started that has continued and is increasing at a rapid pace. In 1940, the total school enrollment was 203; in 1945, 273; 1950, 431; and in 1955, 1,100. The present enrollment is approximately 3,000.

Characteristics of the people. This is a community of young married couples with an unusually large number of children of school and pre-school age. Approximately nine out of ten of these people own their own homes. The developmental plan shows that the present community population to be about 10,000 with a potential growth to 35,000. Schoolwise this means a need for six or seven grade schools, two junior high schools and one senior high.

Existing school facilities. University Place, up to 1960, had not reached the potential population growth for this area. There existed at this time two elementary and one combined junior-senior high school. (Figure 1)

Long range planning. A master plan for the schools in University Place was developed in conjunction with the developmental plan for the community and has been in affect for a number of years. But whether such a master plan already does or does not exist, the procedure followed in coping with the problems of securing the needed buildings for the community will be the same with few exceptions.

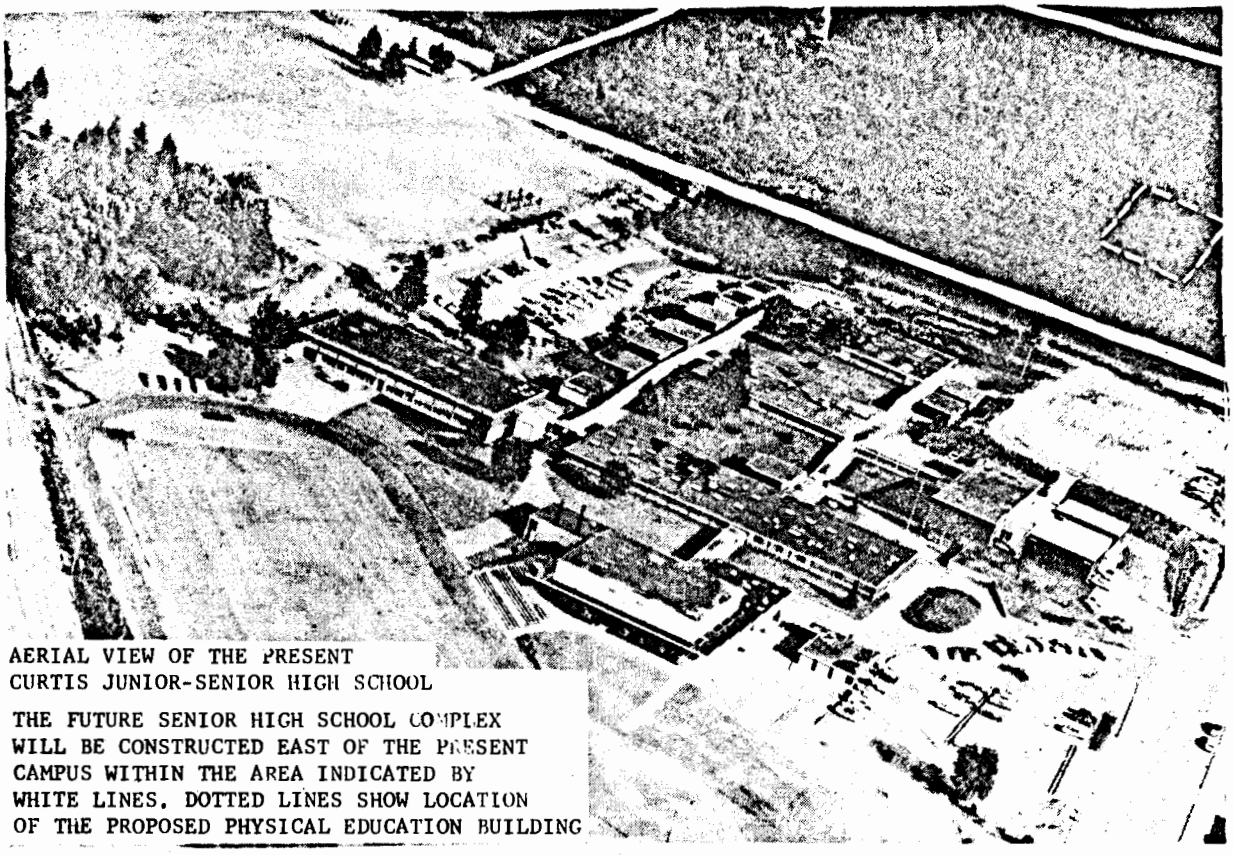
The dangers of inadequate planning must be borne in mind at this point. According to the guide, School Building Planning and Related Problems:

> The importance of securing a school plant that will most adequately serve the needs of a community, present and future, is indeed great. A well-served community produces healthy, happy and progressive groups of citizens, young and old. Add to this the importance of remaining within the community's ability to pay, and the necessity for comprehensive planning becomes even more apparent. (16:23-4)

III. THE CLASSROOM SHORTAGE

Even with this advanced planning, obstacles materialized, which could not have been predicted during the establishment of the master plan.

It became evident in the spring of 1962 that the permanent building program of the University Place Schools



AERIAL VIEW OF THE PRESENT
CURTIS JUNIOR-SENIOR HIGH SCHOOL

THE FUTURE SENIOR HIGH SCHOOL COMPLEX WILL BE CONSTRUCTED EAST OF THE PRESENT CAMPUS WITHIN THE AREA INDICATED BY WHITE LINES. DOTTED LINES SHOW LOCATION OF THE PROPOSED PHYSICAL EDUCATION BUILDING

BUILDING	DESCRIPTION	SIZE
1. Bldg. 1 (1956)	Gym	13,236 sq.ft.
2. Bldg. 2 (1956)	Classrooms	17,679 sq.ft.
3. Bldg. 3 (1956)	Classrooms	9,676 sq.ft.
4. Bldg. 4 (1956)	Multi-Music-Storage (a) Multi-purpose (b) Music Addition (c) Storage	12,000 sq.ft.
5. Bldg. 5 (1958)	Classrooms	9,676 sq.ft.
6. Bldg. 6 (1960)	Classrooms (a) Upper Floor (b) Lower Floor	23,064 sq.ft.
7. Portables (1963)		2,880 sq.ft.
8. Portables (1964)		6,048 sq.ft.
9. Proposed Senior High Physical Education Building (Completion Feb.1, 1967)		21,480 sq.ft.

FIGURE 1

EXISTING JUNIOR-SENIOR HIGH SCHOOL FACILITIES

could not keep up with the rising enrollments. The local problems that created this predicament were vommon problems which faced many school districts throughout the nation.

The major contributing factors requiring use of portables, according to the Educational Facilities Laboratories are:

1. The lack of adequate financing.
2. The fear of over-building
3. To bridge the gap between the time of need and the point at which permanent structures are ready for occupancy. (6:10)

Conditions Causing Shortage.

At the local level the following conditions existed which indicated that some type of emergency housing was necessary. It was not determined immediately what course of action was to be taken to meet these needs but many avenues were explored.

The enrollment explosion. University Place was experiencing the largest population gain in Pierce County. According to the United States census figures, as shown in Table I, the 134 per cent population gain made by the University Place Community for the ten-year period, 1950-1960, was the largest in Pierce County.

TABLE I

POPULATION GAIN

Community	Area Per Cent of Pierce County	Per Cent of Growth
University Place	3.6	134.3
Lakes District	10.0	90.97
Parkland, Spanaway	5.8	61.6
Midland, Canyon, Summit	3.9	40.1
Puyallup	3.7	20.5

It was also found that many additional students could be expected in the fall of 1963. As shown in Figure 2, by the recent projections of the Cohort-Survival Method (recommended by the Washington State Board of Education) it was found that the University Place School System could expect at least 242 additional pupils in the fall of 1964.

Proposition failure. As seen in a review of the last six elections for excess levies and bonds (Figure 3), the failure of the November 6, 1963-1964 special mill election, a five mill levy for the building fund, was defeated at the polls, creating an increasing lag in the building program.

Delay of state aid. A legal cloud hung over the validity of a $59,000,000 state school bond issue which was

	Actual Enrollment (October 1st)								Projected Enrollment				
	19 58	19 59	19 60	19 61	19 62	19 63		Avg. % of survival	19 64	19 65	19 66	19 67	19 68
Kinder-garten	175	177	178	209	226	224	252	107.5%	271	291	313	337	362
Grade 1	165	169	182	173	206	240	230	106.8%	246	263	281	300	320
Grade 2	162	158	189	184	181	201	239	102.1%	235	251	269	287	306
Grade 3	167	173	155	201	190	193	199	102.6%	235	241	258	276	295
Grade 4	159	154	183	161	198	212	218	106.5%	212	250	257	275	294
Grade 5	165	166	151	190	180	203	216	103.6%	226	220	259	266	285
Grade 6	102	167	172	153	190	200	211	104.0%	225	235	229	269	277
Grade 7	119	109	182	186	171	211	205	108.4%	229	244	255	248	292
Grade 8	118	127	116	182	186	190	209	103.3%	212	237	252	263	256
Grade 9	110	122	145	123	187	209	199	108.0%	226	229	256	272	284
Grade 10	112	125*	128*	143	136*	210	204	104.8%	209	237	240	268	285
Grade 11	105	97	125	140*	141*	131	212	101.0%	206	211	239	243	271
Grade 12	74	102	97	125	135*	142	133	99.7%	211	205	210	238	242
Grade 13								%					
Grade 14								%					
Totals 1 - 6	920	987	1032	1062	1145	1249	1303		1379	1460	1553	1673	1777
1 - 8													
7 - 9	347	358	443	491	544	610	613		667	710	763	783	832
10 - 12	291	324	350	408	412	483	549		626	653	689	749	798
9 - 12													
13 - 14*													
Repd.													
Grand Totals	1733	1846	2003	2170	2327	2566	2717		2943	3114	3318	3542	3769

DETERMINING SURVIVAL RATE

FIGURE 2

Date of Election	Yes	No	Total	Percentage Yes Votes	Explanation	Registered Voters	Validating Vote Required
November 8, 1960 for 1961-62	10 MILLS - $85,000 - BUILDING FUND					3855	468
	2158	983	3141	68.64	Proposition carried.		
	4 MILLS - $35,000 - GENERAL FUND (M&O)						
	2213	930	3143	70.41	Proposition carried.		
September 26,'61 additional for 1961-62	6 MILLS - $53,000 - GENERAL FUND (M&O)					4031	1516
	1187	139	1326	89.50	Proposition failed.		
March 13, 1962 for 1962-63	20 MILLS - $193,000 - GENERAL FUND (M&O)					4001	1516
	1811	156	1967	92.06	Proposition carried.		
November 6, 1962 for 1963-64	5 MILLS - $52,250 - BUILDING FUND					4616	1516
	1585	1318	2903	54.59	Proposition failed.		
	10 MILLS - $104,500 - GENERAL FUND (M&O)						
	1643	1249	2892	56.81	Proposition failed		
May 14, 1963 for 1963-64	SCHOOL BONDS - $75,000 - BUILDING FUND					4616	Bonds 1392 (M&O) 557
	1215	189	1404	86.53	Prop. carried - 40% of 3480 (11-6-62)= 1392		
	5 MILLS - $53,325 - BUILDING FUND						
	1195	203	1398	85.47	Prop. carried - 40% of 1392 (3-12-63)= 557		
	13 MILLS - $138,650 - GENERAL FUND (M&O)						
	1232	171	1403	87.81	Proposition carried - 557 votes required.		
March 10, 1964 for 1964-65	6 MILLS - $67,100 - BUILDING FUND					4544	557
	1373	256	1629	84.28	Proposition carried.		
	14 MILLS - $156,500 - GENERAL FUND (M&O)						
	1417	219	1636	86.61	Proposition carried		

RECAPITULATION OF LAST SIX SCHOOL ELECTIONS FOR EXCESS LEVIES AND BONDS

FIGURE 3

authorized by the 1963 state legislature for matching local school district funds for proposed school construction during the 1963-1965 biennium. The Supreme Court of the State of Washington ruled August, 1963, that this bond issue had to be ratified by the voters on November 3, 1964, before they could be sold. This delay not only retarded the local construction program, but aggravated the already growing school population. On November 3, 1964, the voters in the State of Washington approved State Referendum No. 12, the $59,000,000 state school bond issue.

State recommendations. The School Facilities Planning Department of the State Board of Education, in their comprehensive report dated June 11, 1962, recommended a complete new senior high school facility, as well as another elementary school plant.

The state would not provide more matching funds for additions to the present junior-senior high school beyond the music facilities that were under construction. Any permanent construction in this level would have to be paid fully by the school district.

Possible Solutions.

Emergency classroom construction of some kind was deemed a necessity to provide immediate, adequate housing.

Several possibilities for solving the building problems were open:

1. One solution was to place as many students as possible into existing buildings, using double sessions and utilizing every inch of available space until permanent buildings could be constructed.
2. Conduct a search for other available space that could be converted to classroom use.
3. The third choice was to develop a portable classroom program that would contain the students for a few years or until such time that the permanent building program could catch up.

III. PORTABLES VERSUS PERMANENT CONSTRUCTION

Maximum state assistance. A factor which strongly influenced the decision on whether to use portables or not was that by delaying permanent construction, University Place could qualify under the regulation of the State Board of Education which states that a school district must show at least 20 per cent enrollment increase in grades one through twelve over a period of three years to qualify for more than average assistance. The following table shows the district's growth for this period.

TABLE II

INCREASE OF GROWTH

Year	Enrollment	Percentage Increase
Actual on Oct. 1, 1961	2101 (1-12)	
Actual on Oct. 1, 1962	2342 (1-12)	11.47% (1st. yr.)
Actual on Oct. 1, 1963	2465 (1-12)	17.32% (2nd. yr.)
Actual on Oct. 1, 1964	2689 (1-12)	27.98% (3rd. yr.)

University Place would qualify under the above regulation October 1, 1964, enabling them to receive maximum state assistance, based upon their need at the time of application.

It is interesting to note that at this time a new music facility was being constructed using 52.6 per cent local funds and 47.4 per cent state matching funds. Under the above maximum state assistance, a senior high physical education building could be completed February 1, 1967, using 37.6 per cent local funds and 62.4 per cent state matching funds.

The use of supplementary classrooms meant the difference of thousands of dollars to the local taxpayer by waiting to qualify for maximum state assistance.

Comparison of costs. In Figure 4, it is interesting to note that with the 47.4 per cent matching funds that the state had provided for the music facilities, permanent

A. Estimated cost of each portable containing 864 square feet (Built entirely with local funds)

24' X 36' $7,390.00

B. Permanent construction, according to the state ceiling for the quarter beginning January 1, 1964, is $15.71 per square foot

864 square feet X $15.71 = $13,573.44

47.4% (state)	$6,433.81
52.6% (local)	7,139.63
	13,573.44

C. By comparison the following differential is shown:

1. Supplementary classroom construction (1963)	7,390.00
2. Permanent construction	7,139.63
Difference	$ 250.37

FIGURE 4

COMPARISON OF COSTS: PORTABLES VERSUS PERMANENT CONSTRUCTION

classrooms could have been added to the present junior-senior high school at a cost similar to that of supplementary classrooms, but a great inconvenience to the children and the parents would have resulted.

Advantages and disadvantages of portables. Certain advantages and disadvantages became clear at this time regarding the use of portable construction. There are three advantages: (1) Emergency classrooms can be built more quickly because they are financed entirely with local funds and the details connected with state assistance is eliminated. (2) They may be moved easily and quickly from one location to another within the school district, as the need arises. (3) If the time should arise when the district had a surplus of such construction, they could be advertised and sold by the school board, thereby reclaiming a portion of the original investment.

The disadvantages included are the following: (1) Emergency classroom construction is one of the areas in which the State Board of Education will not provide matching funds. (2) The quality of educational utility and structure, is generally lower than that of permanent facilities. (3) If the time should come when the district had a surplus of such construction, and it was impossible to recapture your equity, portables would become a very costly venture. (4) The appearance is usually sacrificed in meeting low-cost budgets.

IV. METHOD OF SOLUTION

After weighing carefully the possible solutions to the problem of overcrowded classrooms, the decision was made to initiate a program of portable construction to bridge-the-gap until permanent buildings could be constructed with the help of maximum state aid.

The use of supplementary classrooms meant the difference of thousands of dollars to the local taxpayer by waiting to qualify for maximum state assistance. A 20 per cent increase in enrollment in grades one through twelve over a three year period spanning 1961 through 1964 placed them in this category.

If for no other reason than the above, the use of portable construction to carry the district over the emergency period seemed sensible to the administration and school board at this time.

CHAPTER IV

GENERAL RECOMMENDATIONS

A community anticipating the use of supplementary classrooms should consult with architects and planners to define clearly the variety of uses to which the intended spaces will be assigned. The architect chosen to plan this program of portable construction for the University Place Schools was Robert Billsborough Price. He had been instrumental in planning the present Curtis Junior-Senior High School and it seemed advisable, because of his knowledge of the community and its needs, to continue with his services at this time. He immediately conducted a study of possible structures, designs, costs and uses. The outcome of this study eventually lead to the building of supplementary classrooms in use at the present time by the University Place School System.

When approaching the possible use of portables, it was found by the University Place School District that the primary considerations for their anticipated use fell into four major areas.

I. PLANNING

Basic planning considerations that relate to standard school facilities are also important to the planning of

relocatable structures, especially since these units are most often physically separated from the main plant.

Portables are generally assigned to a school only when the main plant is already filled beyond its planned capacity. It is necessary that the supplementary unit provide more than just seating capacity for the students. It should also include several small areas for reading and project assignments, space for storage of books and supplies, the teacher's desk and file, wardrobe storage,and mechanical equipment for heating and ventilation. This is especially true if the classroom is for the primary or intermediate grades.

Space needs. If the relocatable space is to be used for a lecture room and only that, the space need can be roughly calculated at twenty two and a half to twenty-five square feet per pupil as required by the State Board of Health, in groups of thirty to thirty-five students. This is not being overly generous, but it will allow for necessary chair and elbow room, aisle space, lecture space for the teacher and some wall space for coat racks if necessary. Careful planning must also take into consideration the inclusion of mechanical equipment (furnace and ventilation or air-conditioning equipment) in the total space allocation.

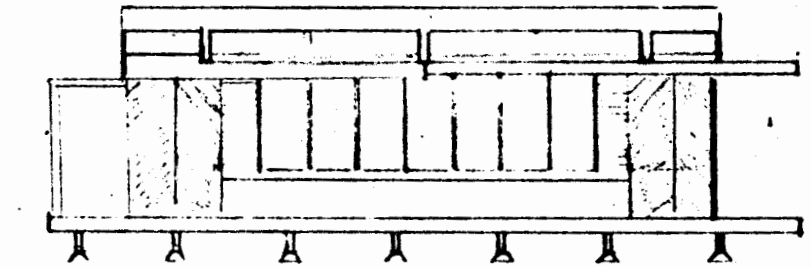
As the grade level drops, the space need per student within a classroom rises rapidly. The space need per

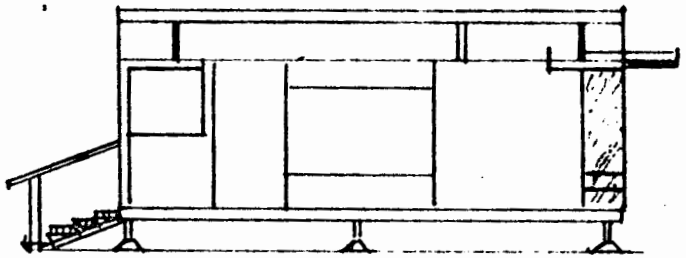
student is even more critical if the classroom is isolated from the school, without easy access to rest rooms, library facilities, and other auxiliary spaces. Portables are, in reality, one-room school houses, especially in cold weather where the climate makes access from the main plant uncomfortable, or impractical. (9:2)

At primary levels, the space need can be estimated at approximately thirty to thirty-five square feet per student in groups of thirty to thirty-five students. This will allow for the additional space needed.

Examples. To house the overflowing students at Curtis, two portables of different design were put to use. One has an area of 960 square feet, while the other contains 864 square feet. (Figures 5 and 6). The floor space of these portables has proven to be more than adequate for housing seventh and eighth grade groups of twenty-four to twenty-eight students.

State regulations. The State Board of Health regulations and the check list devised by the State Fire Marshal should be checked very carefully with reference to meeting the requirements contained in the material. Any classroom, whether it is a supplementary classroom or a regular classroom, must meet the requirements of the State Fire Marshal and the State Board of Health. The State Superintendent of





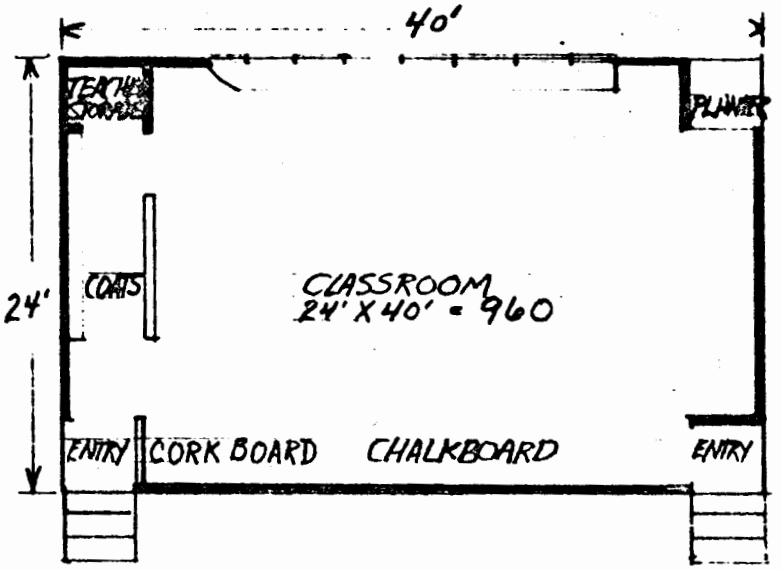
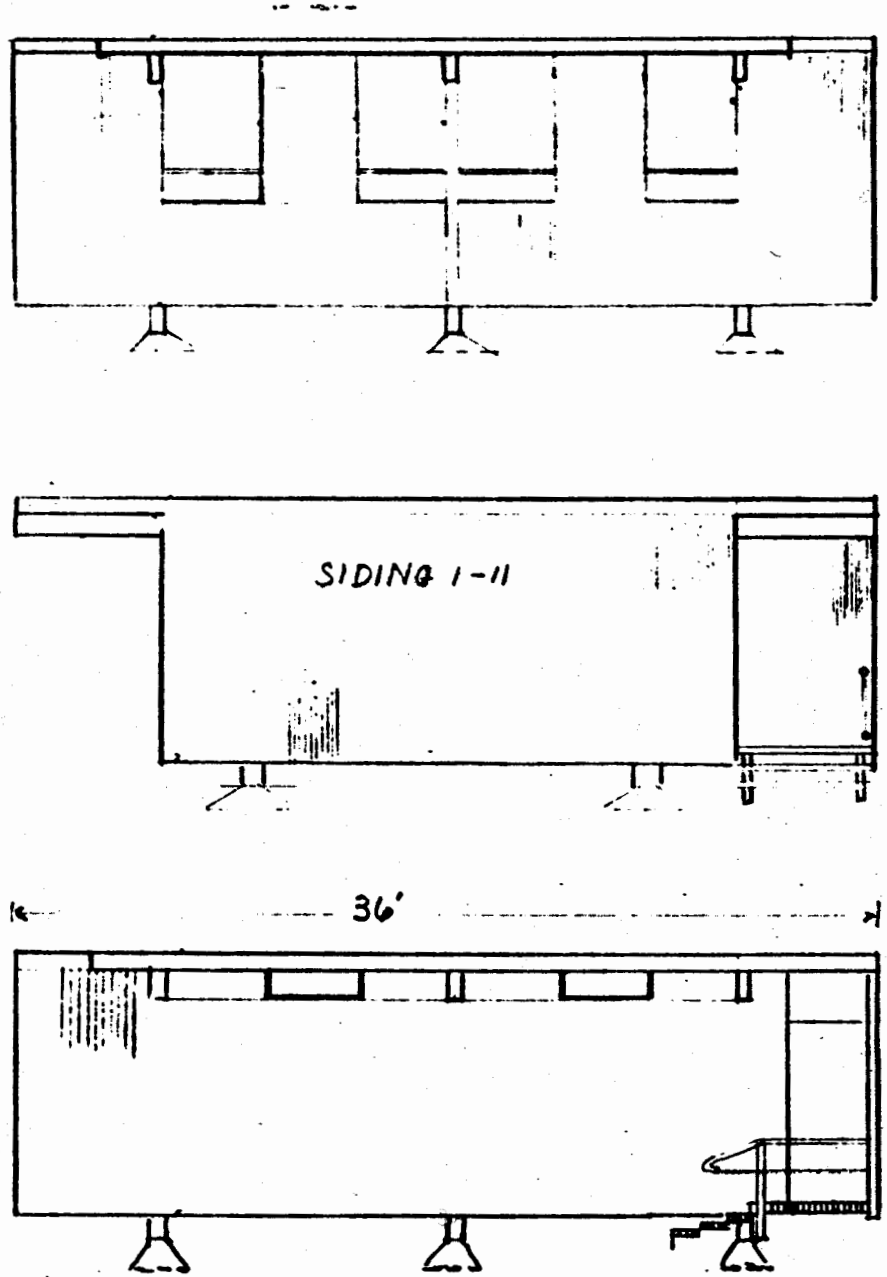


FIGURE 5

DOUGLAS FIR PLYWOOD ASSOCIATION
SUPPLEMENTAL CLASSROOM



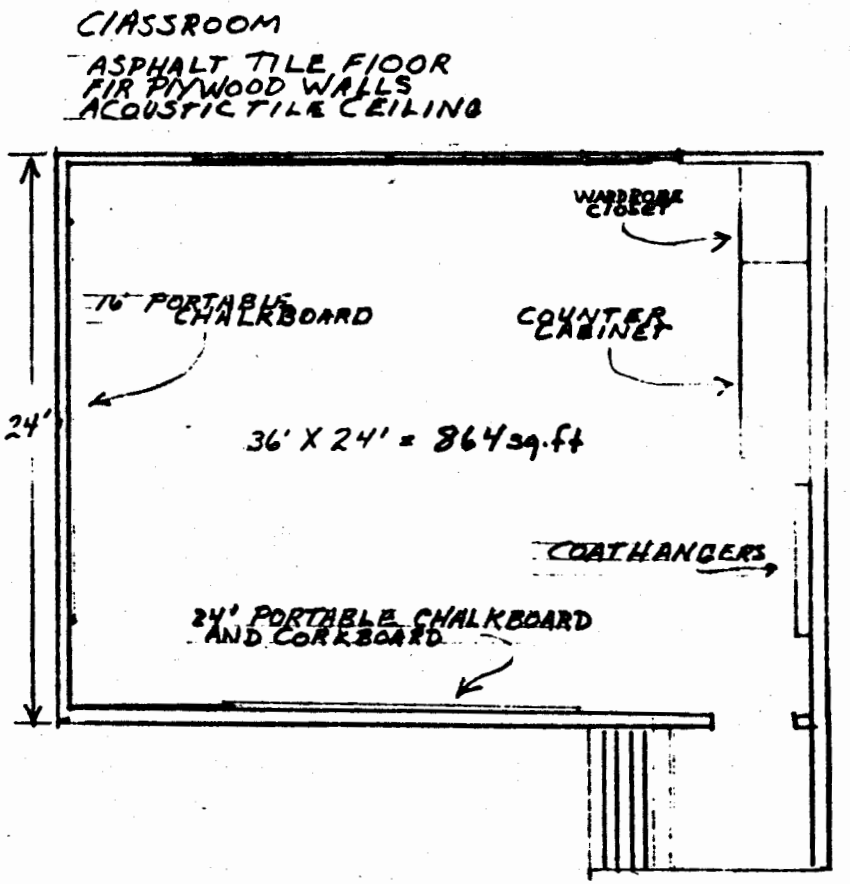


FIGURE 6

SUPPLEMENTARY PORTABLE CLASSROOM
ARCHITECT
ROBERT BILLSBROUGH PRICE

Public Instruction feels that a portable or supplmental classroom should meet the same standards educationally as a regular classroom. It should be adequate in size, meet all health requirements and be a desirable place for a student to work.

II. COSTS

Calculating costs. Correspondence with other school districts using portables indicates that the initial costs of supplementary classrooms range from $5.00 per square foot up to $40.00 per square foot. Preparing the site costs from $100.00 to $6000.00 per unit. Transporting the portables from site also ranges widely from $160.00 to $1,000.00 per unit. The quality of the various classrooms provided, vary from system to system.

Comparisons. In Figure 7, a comparison of costs between the portables used by the University Place and those used by the Clover Park School System is provided.

Methods of estimating costs. The cost of a classroom in a permanent structure may be estimated at a given amount. This figure is arrived at by deciding the total cost of the school plant by the number of regularly assigned teaching stations within the school. This calculation takes into account a pro-rated cost of structure for all school

R. B. Price Supplementary Portable Classrooms:

Complete, including ventilation, heating and lighting to meet State Health Department Standards, plus resiliant flooring.

Dimensions: 24' X 36' = 864 sq. ft.

Cost per sq. ft. $8.64 X 864 sq. ft. = $7, 390.00

Clover Park Supplementary Portable Classrooms:

Original bid	$5,527.00	
Additional cost to meet State code on lighting	180.00	
Additional cost to meet State Code on heating and ventilation	867.00	
Resilient floor covering	225.00	
	$6,799.00	

Dimensions: 24' X 32' = 768 sq. ft.

Cost per sq. ft.: $8.85 X 768 sq. ft. = 6,799.00

FIGURE 7

SUPPLEMENTARY PORTABLE CLASSROOM

COST ANALYSIS

facilities and services that include (a) teaching stations; (b) auxiliary areas; music, library, administration, cafeteria, gymnasium, auditorium spaces, outside physical education facilities and site work; and (c) service and structure areas; corridors, walkways, toilet rooms, custodial storage, etc. Thus, the classroom figure includes not only the area the student occupies in the classroom, but also the costs of an additional forty to eighty square feet of auxiliary and service area space in which is housed his total educational program. (9:3-4)

By contrast, the $7,000.00 supplementary classroom seldom provides more than classroom space, generally ranging from twenty-two to twenty eight square feet per student. Moreover, this figure often represents the delivered or erected cost of a structure, not including additional expenses for foundation, utility lead lines, entry steps, sidewalks, architectural fees, special permits, and other factors.

Items included in the original bid. It should be brought to the attention of the reader that the portables constructed for the University Place School District contained a number of items in the original bid that were considered to be extras in the Clover Park portables. (Figure 8)

Item	Clover Park	Price Portable
1. Floor covering	Chip board	"C" grade asphalt tile
2. Chalk and cork board	Not in contract	Included in contract
3. Cross ventilation	Not included	Included in design
4. Cabinet work	Not included	Included in design
5. Coat hanger area on wall	Not included	Included in design
6. Hardware	"Quickset" residential	Schlage-Same as Master Building
7. Underfloor	Not included	Included in design

FIGURE 8

COMPARISON OF ITEMS FURNISHED IN ORIGINAL DESIGN

III. UTILITIES COSTS

The costs of bringing water, power, gas, sewers, etc., to a site often accounts for more than half the total cost of relocating a unit structure and sometimes runs to thirty to fifty per cent of the cost of the building itself. Where a high degree of mobility is anticipated for any school space, planners would best attempt to reduce the number of utility leads needed for the operation of the building. The costs for hookup and disconnecting may influence a district's choice of oil, gas,or electric power for a heating and/or air conditioning system.

Grouping portables is another factor to consider. Bringing utilities to a site for a single unit might be prohibitively expensive, whereas the same basic costs could provide comparable utilities service to a number of units. This is one of the reasons that most school districts move portables in groups rather than individually.

IV. APPREARANCE

University Place has demonstrated that good design and good taste are not necessarily equated with high costs. Color, textures, selection of proper building materials and finishes and insistence on quality workmanship have produced buildings that are a pride to the students and the community.

Overcoming isolation problems. Careful planning for the use and placement of relocatable structures can help overcome some of the problems of isolation of the classrooms from the total school complex. It would be wise to consult the local building and fire codes before locating portables, but even though the local codes usually call for physical separation, usually a ten foot minimum, the units can be connected by covered walkways as they are at Curtis.

Location and appearance of Curtis portables. The Curtis portables are located in a row along the covered walkway at the north side of the campus. The exterior siding used on the original buildings is continued on the portables causing them to blend in with the surrounding structures. The campus type arrangement of Curtis Junior-Senior High School adjusts quite readily to the use of portables, therfore ceating a more positive school atmosphere. (Figure 9)

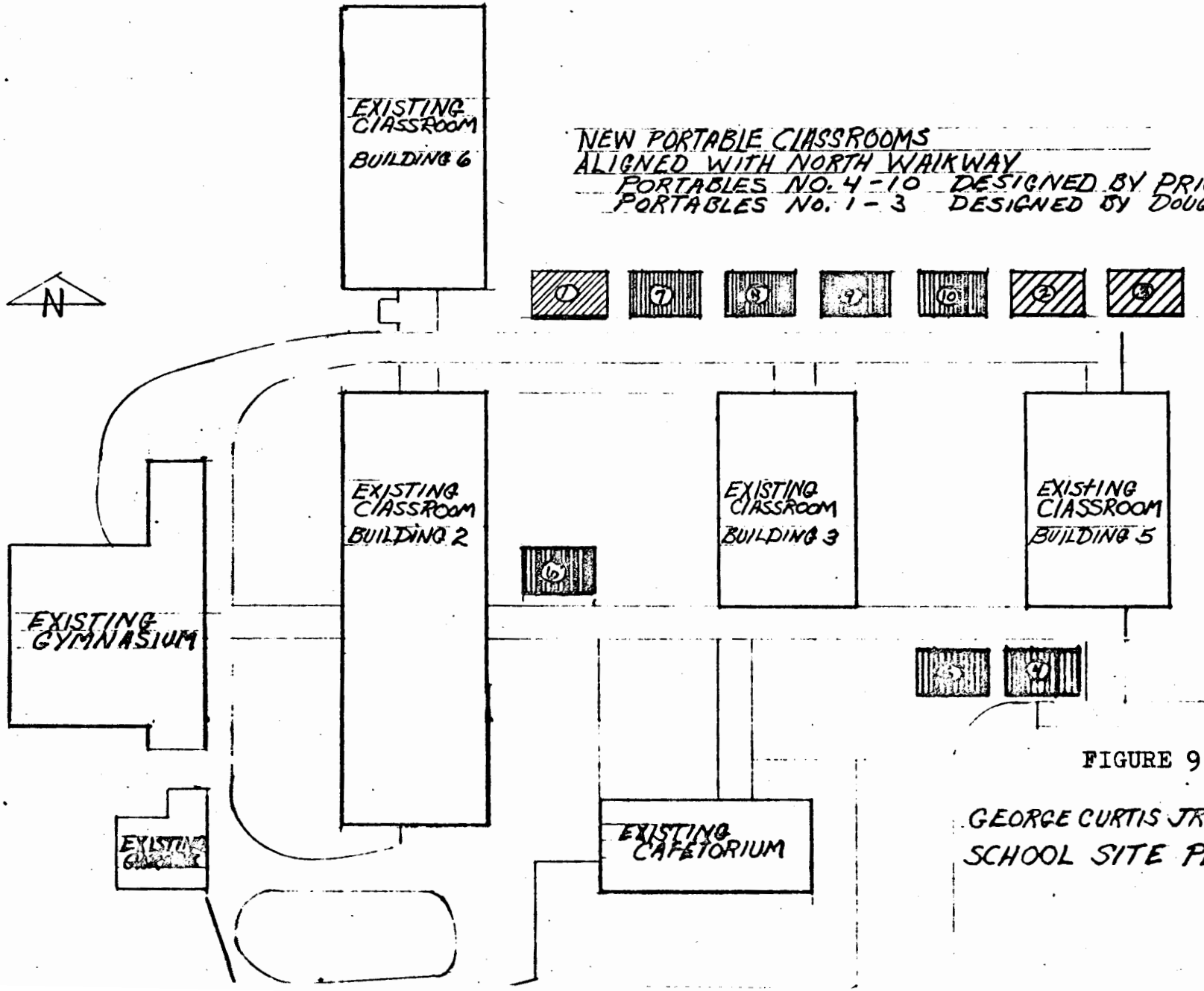


FIGURE 9

GEORGE CURTIS JR.-SR. HIGH SCHOOL SITE PLAN

CHAPTER V

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

I. SUMMARY

The purpose of this study was to determine through a survey of the University Place District and its shortage of classroom space, whether supplementary classrooms, depending on the circumstances and needs of the district, are a valid method of handling today's overcrowded conditions.

From an examination of the records of the University Place School System, it was clearly visible that the school district was faced with a classroom shortage in the fall of 1962.

The various factors which created this problem were determined through a series of interviews with the superintendent and the principal of Curtis Junior-Senior High School.

Research revealed that various solutions to the problem existed at that time and it was discovered through additional investigation that the choice between portable classrooms and permanent construction was dependent upon: (1) a comparison of costs between portable and permanent construction, (2) advantages and disadvantages of portables, (3) the savings that would be realized by meeting the requirements

for maximum state aid and (4) the inconvenience and overcrowding that would have existed until permanent buildings were ready.

The community's use of portables to solve its building shortage was examined and recommendations for the use of portables were drawn.

II. CONCLUSIONS

Within the limitations of this study the following conclusions were reached:

1. The use of portables to overcome the shortage of classroom space in the University Place School District was a suitable course of action. It meant sizeable savings to the local taxpayer by qualifying for maximum state aid.
2. There is a definite place for portables in today's educational picture. Portables are the only answer to the shortage of classroom space in large communities which are faced with unpredictable enrollments.
3. In many instances where portables have been used to solve building shortage needs, it would have been possible and preferable to have constructed permanent buildings.

4. Permanent construction is more desirable than portable construction, even though a short period of sacrifice and inconvenience may exist.
5. Portables are a symbol of doubtful methods of solving building problems within a school district when they are used: (1) to overcome a lack of adequate building funds brought on by proposition failures, (2) as a means of concealing the inefficiency of the administration's ability to plan for future enrollments, (3) as strictly a method of saving money.
6. Portables, up to this point, have demonstrated a lack of advanced planning and consideration. They should receive as much attention in the planning stages as permanent structures do.
7. Although portables are considered to be a temporary measure, they normally become a permanent fixture after they are once placed.

III. RECOMMENDATIONS

Within the confines of this study the writer makes the following reoommendations:

1. That a closer look be taken at the use of portables throughout the State of Washington by the State

Superintendent of Public Instruction and a definite set of standards be established for their use.

2. That though the state does not furnish matching money in this area, literature dealing specifically with supplementary classrooms be made available for those districts interested. It might be possible through suggestions and recommendations from the State Department of Public Instruction to eliminate the use of portables entirely or at least eliminate the poor practices which exist in their use today.
3. That literature cover such areas as long-range planning, advantages of permanent construction over temporary construction, planning for the eventual elimination of portables so they won't become permanent, cost comparisons, and recommendations for the use of portables.
4. That a state pool of portable classrooms be originated. From this pool, individual classrooms could be leased to school districts requiring their use. When the school district's permanent building program becomes commensurate with enrollments, the state portables could be re-leased to other districts. In this way, school districts could

be encouraged to build permanent structures instead of relying on portables as a permanent measure. It would also be possible to relieve communities of surplus space in the form of portables to recapture their equity.

IV. IMPLICATIONS FOR FURTHER STUDY

Although the basic question was not to determine the affect portables had on the general atmosphere of the school and those persons involved with them, the question came up many times in the form of reactions, recommendations and public opinions. It is the writer's recommendation that further studies be made concerning the effect portables might have on the atmosphere of the school and on those people using them.

The writer recommends that a study be made to ascertain the feasibility of a state pool of portables to be leased and transported to school districts at the time of need.

A study designed to furnish administrators with information on the additional problems portables create would be helpful and worthwhile. It could cover such areas as: (1) overcrowded auxiliary spaces, (lunchrooms, lavatories, hallways, gyms, etc.) and (2) the functions for which portables best/least adapt.

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